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10/601,072	06/19/2003	Jean-Philippe Girard	CNRS.009CP1	5184

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KNOBBE MARTENS OLSON & BEAR LLP
2040 MAIN STREET
FOURTEENTH FLOOR
IRVINE, CA 92614

EXAMINER	
YAO, LEI	
ART UNIT	PAPER NUMBER
1642	

NOTIFICATION DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

jcartee@kmob.com
eOAPilot@kmob.com

Office Action Summary	Application No.	Applicant(s)	
	10/601,072	GIRARD ET AL.	
	Examiner	Art Unit	
	LEI YAO	1642	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 October 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *15, 17-20, 22, 24, 26-27, 92, 94-95, 97, 99-105, 107-108, 110-111, 113, 115-116, 118, 120-161* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *See Continuation Sheet* is/are allowed.

6)☒ Claim(s) *122-161* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Continuation of Disposition of Claims: Claims allowed are 15,17-20,22,24,26,27,92,94,95,97,99-105,107,108,110,111,113,115,116,118,120 and 121.

Request for Continued Examination

The request filed on 10/14/2009 for a Continued Examination (RCE) under 37 CFR 1.114 based on Application No. 10601072 is acceptable, and a RCE has been established. An action on the RCE follows.

Claims 122-161 are added.

Claims 1-14, 16, 21, 23, 25, 28-91, 93, 96, 98, 106, 109, 112, 114, 117, 119 are cancelled.

Claims 15, 17-20, 22, 24, 26-27, 92, 94-95, 97, 99-105, 107-108, 110-111, 113, 115-116, 118, 120-161 are pending and are examined for a method of inhibiting the activity of or binding to a chemokine with an agent comprising a peptide that is at least 95% identity to SEQ ID NO: 3 or to a chemokine binding domain of SEQ ID NO: 3.

Previous final Office Action dated 10/15/2008

The rejections in the previous Office action including rejection of claims under *35 USC § 112 1st paragraph* are withdrawn in view of amendment, applicant's argument and/or new considerations. If any rejection/objection is maintained, it will be reiterated below.

Specification

It is noted that this application is a continuation in part of U.S. Patent Application No. 10317832 that has been patented as No. 7572886. Updating the specification would be appreciated.

Claim Objection

Claim 135 and 156 are objected to for typographical error as "CC5". Amending the term to "CCL5" would obviate this objective.

Claim Rejections - 35 USC § 112

The following is a quotation of **the first paragraph of 35 U.S.C. 112**:

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Written Description Rejection- *A variant of SEQ ID NO: 3 or chemokine binding domain thereof having 95% identity binding to a chemokine or inhibiting the activity of a chemokine.*

Claims 122-161 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

To satisfy the written description requirement, a patent specification must describe the claimed invention in sufficient detail that one skilled in the art can reasonably conclude that the inventor had possession of the claimed invention. Possession may be shown, for example for the **claimed method**, by describing an actual reduction to practice of the claimed invention by showing that the inventor

constructed an embodiment or performed a process that met all the limitations of the claim and determined that the invention would work for its intended purpose. For claimed product the specification must provide sufficient distinguishing identifying characteristics of the genus, including disclosure of complete or partial structure, physical and/or chemical properties, functional characteristics, structure/function correlation, methods of making the claimed product, or any combination thereof.

In this case, claims 122-129 and 142-149 are drawn to a method of inhibiting the activity of or binding to a (any) chemokine comprising contacting a chemokine with a peptide having at least 95% identity to either the sequence of SEQ ID NO: 3 or its chemokine binding domain. Claims 130-141 and 150-161 are drawn to a method of inhibiting the activity of or binding to the chemokine SLC (CCL21), CCL19, CCL5, CXCL9 or CXCL10 comprising contacting a chemokine with a peptide having at least 95% identity to either the sequence of SEQ ID NO: 3 or its chemokine binding domain.

Thus, the claimed method includes using any variant polypeptide that is 95% identical to the amino acids of SEQ ID NO: 3 or the domain of 143-213 of SEQ ID NO: 3 to bind to or inhibit the activity of any of the known or unknown chemokines.

The specification teaches that THAP1 protein has the amino acids of SEQ ID NO: 3 (213 aa) and the chemokine binding domain of THAP1 is the C-terminal amino acids 143-213 of SEQ ID NO: 3. Figure 12 of the specification describes the polypeptide fragments of THAP1 (SEQ ID NO: 3) and the chemokine-binding domain associated with the chemokine SLC binding. The figure also describes that the C-terminal fragments of SEQ ID NO: 3, aa 90-213, aa143-213, and aa143-213 have the same binding ability to SCL as the full length SEQ ID NO: 3 (213 aa) to. The figure also

describes that the protein with a deletion of five amino acids (ΔQRCRR) at position 168-172, lost ability of binding to the chemokine. The deletion is located in the chemokine binding domain and counts more than 5% sequence of the SEQ ID NO: 3. Thus, the specification self has suggested that not all the polypeptide having more than 95% identity to the sequence of SEQ ID NO: 3 has the binding ability to one chemokine, SLC.

The specification lists numbers of chemokines and states that the chemokine can be tested for binding to the THAP1 protein (page 255). However, the specification, Figure 19, describes that full length THAP1-GST fusion protein binds to a few chemokines (SLC, CCL19, CCL5, CXCl9 and CXCl10) listed in the claims, e.g. claim 130 etc. The specification does not provide information or teaching on the ability of other listed chemokines for the binding or inhibitory activity by the protein. Both Applicant and one skilled in the art clearly know that term "chemokine" is defined by a function, not structure and the chemokines having the same function could have different structures.

Thus, the teachings of the specification as indicated above do not show that 1) all the peptides having 95% sequence identity to the protein of SEQ ID NO: 3 or its chemokine binding domain have the same ability as the wild type protein or the chemokine binding domain thereof, 2) even the wild type THAP1 or the chemokine binding domain (aa 143-213) binds to all types of the chemokines, and 3) correlation of the structure of the chemokines with their binding ability to the THAP1 protein or the domain.

The state of the art has shown that a protein having more than 95% sequence identity to the chemokine binding domain (143-213) of SEQ ID NO: 3, however, the protein is only suggested to have stem cell and hematopoiesis proliferation or related activities (R. Drmanac, US 20050196754 A1, page 18-19, section 4.10, and see attached sequence search result).

A description of a genus may be achieved by means of a recitation of a representative number of species falling within the scope of the genus or by describing structural features common the genus that "constitute a substantial portion of the genus." See University of California v. Eli Lilly and Co., 119 F.3d 1559, 1568, 43 USPQ2d 1398, 1406 (Fed. Cir. 1997): "A description of a genus of cDNAs may be achieved by means of a recitation of a representative number of cDNA, defined by nucleotide sequence, falling within the scope of the genus or of a recitation of structural features common to the members of the genus, which features constitute a substantial portion of the genus." The Federal Circuit has recently clarified that a DNA molecule can be adequately described without disclosing its complete structure. See Enzo Biochem, Inc. V. Gen-Probe Inc., 296 F.3d 1316, 63 USPQ2d 1609 (Fed. Cir. 2002). The Enzo court adopted the standard that the written description requirement can be met by "show[ing] that an invention is complete by disclosure of sufficiently detailed, relevant identifying characteristics. i.e. complete or partial structure, other physical and/or chemical properties, functional characteristics when coupled with a known or disclosed correlation between function and structure, or some combination of such characteristics. " Id. At 1324, 63 USPQ2d at 1613.

The court has since clarified that this standard applies to compounds other than cDNAs. See University of Rochester v. G.D. Searle & Co., Inc., __F.3d__,2004 WL 260813, at *9 (Fed.Cir.Feb. 13, 2004). The specification provides neither a representative number of polypeptides that encompass the entire genus that reveal the roles of these polypeptides in the binding and inhibition of the activity of all the chemokines, nor does it provide a description of structural features that are common to the polypeptide having at least 95% homology to amino acid sequence 143-213 of SEQ ID NO: 3 that could bind and inhibit the activity of any chemokine including the

chemokine listed in the claims. Since the disclosure fails to describe the common attributes or characteristics that identify members of the genus, and because the genus is highly variant, the disclosure of the species of polypeptide is insufficient to describe the genus. Thus, one of skill in the art would reasonably conclude that the applicants, at time of filing the application, do not have the possession of claimed invention.

Vas-Cath Inc. v. Mahurkar, 19USPQ2d 1111, clearly states "applicant must convey with reasonable clarity to those skilled in the art that, as of the filing date sought, he or she was in possession *of the invention.* The invention is, for purposes of the 'written description' inquiry, *whatever is now claimed.*" (See page 1117.) The specification does not "clearly allow persons of ordinary skill in the art to recognize that [he or she] invented what is claimed." (See *Vas-Cath* at page 1116). As discussed above, the skilled artisan cannot envision the detailed chemical structure(s) and functional attribute(s) of the encompassed genus of the polypeptides and genus of the chemokines, and therefore conception is not achieved until reduction to practice has occurred, regardless of the complexity or simplicity of the method of isolation. Adequate written description requires more than a mere statement that it is part of the invention and reference to a potential method of isolating it. The compound itself is required. See *Fiers v. Revel*, 25 USPQ2d 1601 at 1606 (CAFC 1993) and *Amgen Inc. v. Chugai Pharmaceutical Co. Ltd.*, 18 USPQ2d 1016.

One cannot describe what one has not conceived. See *Fiddes v. Baird*, 30 USPQ2d 1481 at 1483. In *Fiddes*, claims directed to mammalian FGF's were found to

be unpatentable due to lack of written description for that broad class. The specification provided only the bovine sequence.

Therefore, only the protein comprising the sequence of SEQ ID NO: 3 or the chemokine binding domain of 143-213 of SEQ ID NO: 3 that bind to and inhibit the activity of the chemokine SLC, CCL19, CCL5, CXCL9 or CXCL10 and the chemokines set forth in the declaration of co-inventor, Jean-Philippe Girard, but not the full breadth of the claims, meets the written description provision of 35 U.S.C. §112, first paragraph. Applicant is reminded that *Vas-Cath* makes clear that the written description provision of 35 U.S.C. §112 is severable from its enablement provision (see page 1115).

Scope of Enablement rejection:

Claims 122-161 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for a method of binding to and inhibiting the activity of the chemokines, SLC, CCL19, CCL5, CXCL9 or CXCL10 and the chemokines set forth in the declaration of co-inventor, Jean-Philippe Girard, by contacting the THAP1 protein of SEQ ID NO: 3 (full length) or its chemokine binding domain (143-213 of SEQ ID NO: 3), does not reasonably provide enablement for the full claimed scope including **A)** the method of binding and inhibiting a (any) chemokine with any form of THAP1 protein comprising the full length of SEQ ID NO: 3, chemokine binding domain (143-213 of SEQ ID NO: 3) or its homologies (95% or more sequence identity) and **B)** the method of binding and inhibiting the activity of any chemokine including the chemokines above

by contacting and binding the THAP1 homologies having at least 95% sequence identity to SEQ ID NO: 3 or to the chemokine binding domain (143-213 of SEQ ID NO:3).

The factors to be considered in determining whether undue experimentation is required are summarized In re Wands 858 F.2d 731, 8 USPQ2nd 1400 (Fed. Cir, 1988). The court in Wands states:

"Enablement is not precluded by the necessity for some experimentation such as routine screening. However, experimentation needed to practice the invention must not be undue experimentation. The key word is 'undue,' not 'experimentation.' " (Wands, 8 USPQ2d 1404). Clearly, enablement of a claimed invention cannot be predicated on the basis of quantity of experimentation required to make or use the invention. "Whether undue experimentation is needed is not a single, simple factual determination, but rather is a conclusion reached by weighing many factual considerations." (Wands, 8 USPQ2d 1404). The factors to be considered in determining whether undue experimentation is required include: (1) the quantity of experimentation necessary, (2) the amount or direction or guidance presented, (3) the presence or absence of working examples, (4) the nature of the invention, (5) the state of the prior art, (6) the relative skill of those in the art, (7) the predictability or unpredictability of the art, and (8) the breadth of the claims.

In this case, the claims 122-129 and 142-149 are broadly drawn to a method of inhibiting the activity of or binding to a (any) chemokine comprising contacting a chemokine with a peptide having at least 95% identity to either the sequence of SEQ ID NO: 3 or its chemokine binding domain. Claims 130-141 and 150-161 are drawn to a method of inhibiting the activity of or binding to the chemokine SLC, CCL19, CCL5, CXCL9 or CXCL10 comprising contacting a chemokine with a peptide having at least 95% identity to either the sequence of SEQ ID NO: 3 or its chemokine binding domain.

To satisfy the requirement of 112, 1st paragraph, it is necessary that the specification provide an enabling disclosure of how to make and use a claimed invention. The objectives of the claims are 1) binding and inhibiting a (any) chemokine

activity with the protein of SEQ ID NO: 3, its chemokine binding domain (aa143-213) and 2) binding and inhibiting a chemokine activity comprising SLC, CCL19, CCL5, CXCL9 or CXCL10 with a any peptide having 95% sequence identity to the protein of SEQ ID NO: 3 or to the domain thereof. Thus, it would be expected that one of skill in the art would be able to use any variant protein or peptide that is 95% identical to the amino acids of SEQ ID NO: 3 or the domain of 143-213 of SEQ ID NO: 3 to bind to or inhibit the activity of any of the known or unknown chemokines without undue a quantity of experimentations.

The specification teaches that THAP1 protein has the amino acids of SEQ ID NO: 3 (213 aa) and the chemokine binding domain of THAP1 is the C-terminal amino acids 143-213 of SEQ ID NO: 3. Figure 12 of the specification describes the polypeptide fragments of THAP1 (SEQ ID NO: 3) and the chemokine-binding domain associated with the chemokine SLC-binding. The figure describes that the C-terminal fragments of SEQ ID NO: 3, aa 90-213, aa 143-213, and aa143-213 have the same binding ability as the full length SEQ ID NO: 3 (213aa) to chemokine SCL (CCL21). The figure also describes that the protein with a deletion of five amino acids (ΔQRCRR) at position 168-172, lost ability of binding to the chemokine. The deletion is located in the binding domain and counts more than 5% sequence of the SEQ ID NO: 3. Thus, the specification self has suggested that not all the polypeptide having more than 95% identity to the sequence of SEQ ID NO: 3 has the binding ability to one chemokine, SLC/CCL21.

The specification lists numbers of chemokines that can be tested for binding to the THAP1 protein (page 255). However, the specification, Figure 19, describes that THAP1-GST fusion protein binds to very few chemokines (SLC, CCL19, CCL5, CXCl9 and CXCl10) listed in the claims, e.g. 130 etc. The declaration Co-inventor, Jean-Philippe Girard on 10/30/2007 showed migration of the cells induced by a few CCL chemokines (CCL1, CCL2 and CCL5).

One cannot extrapolate the teachings of the specification to the scope of the claims because the specification does not provided **A)** any teaching, direction/guideline, working example, or experimentation to show that any other chemokines binding to and inhibiting any activity by the protein of SEQ ID NO: 3 or the domain thereof and **B)** binding and inhibiting the activity of a chemokine including SLC, CCL19, CCL5, CXCL9 or CXCL10 the THAP1 homologies having 95% sequence identity to SEQ ID NO: 3 or to the chemokine binding domain (143-213 of SEQ ID NO:3). 3).

As described teaching of the figure 12, the instant specification self teaches claimed method does not works with any peptide having at least 95% sequence identity to SEQ ID NO: 3 or the binding domain. Thus, the specification fails to provide enablement disclosure for claimed invention which one skilled in the art could use the invention without undue a quantity of experimentations.

It is also know in the art that even a single modification or substitution in a protein sequence can alter the protein function. Protein chemistry is probably one of the most unpredictable areas of biotechnology. For example, the replacement of a single lysine at position 118 of the acidic fibroblast growth factor by a glutamic acid led to a

substantial loss of heparin binding, receptor binding, and biological activity of the protein (Burgess et al, Journal of Cell biology, Vol 111, p2129-2138, 1990, provided in the Office Action 07/27/2006). Removal of the amino terminal histidine of glucagons substantially decreases the ability of the molecule to bind to its receptor and activate adenylate cyclase (Lin et al Biochemistry USA, vol 14, p1559-1563, 1975, provided in the Office Action 07/27/2006). These references demonstrate that even a single amino acid substitution or what appears to be an inconsequential chemical modification, will often dramatically affect the biological activity of the protein. Based on the teaching above, the function of the protein variant is not predictable art unless undue quantity of experimentations have been performed.

In view of the lack of guidance, lack of examples, and lack of predictability and objective evidence showing that the THAP1 of SEQ ID NO: 3 or the chemokine binding domain could bind to and inhibiting the activity of any chemokine with a peptide having 95% the sequence identity to the SEQ ID NO: 3 or the binding domain, one skilled in the art would not know how to use the claimed invention based on the teachings in the prior art and the instant specification and under a quantity of experimentations would be forced.

Response to Applicant's argument:

Applicant's arguments to the rejections of claims 15-121 (page 9-10, remarks) are moot in view of the new rejections above that do not include these claims.

Applicant presents arguments regarding the newly added, pending claims drawn to method of inhibiting the activity of or binding to a chemokine using a peptide

comprising THAP1 (SEQ IDS NO: 3), a peptide having 95% sequence identity to the SEQ ID NO: 3 or the binding domain thereof. Each of the arguments are responded below.

A. The specification provides description the peptides having 95% sequence identity to SEQ ID NO: 3 that binds to chemokine and inhibits the activity at page 78 and figure 12 (page 11). The specification provides a representative number of polypeptides that include a chemokine binding domain having at least 95% amino acid sequence. The specification describe most, if not all, of the chemokine known at the time of filing the instant specification used in the method (page 12).

Applicants' arguments have been carefully considered but are not persuasive. Regarding the 95% sequence identity, Application provides the chemokine binding domain (aa123-213) responsible for the SLC chemokine binding and teach one species, a deletion of the THAP1 protein ((ΔQRCRR) at position 168-172, that has more than 95% sequence identity to either SEQ ID NO: 3 or the binding domain lost ability of binding to the chemokine SLC, no other species and further information of structure/function relation of this protein or domain thereof have been described. Thus, the skilled artisan cannot envision the detailed chemical structure(s) and functional attribute(s) of the encompassed genus of the claimed variants. Regarding description of most of the known chemokines, the specification lists numbers of chemokines that can be tested for binding to the THAP1 protein (page 255). However, the specification merely describes that THAP1-GST fusion protein binds to the chemokines (SLC,

CCL19, CCL5, CXCl9 and CXCl10) in the list. As stated in the rejection, a protein defined as a chemokine is based on the protein's function, not the structure. It is well understood that the known chemokines have that limited structural similarity, e. g. the C-C or CXC motif. Thus, one chemokine binding a protein does not suggest or teach all the chemokines in the same C-C or CXC family having the same binding ability to this protein.

B. The specification further argues the working examples have been provided (example 15-17, 32, 33, and 38). Declaration of Dr. Jean-Philippe Girard has described examples 34-36. Undue experimentation is not measured by the amount of time, expense, of quantity of experimentation.

Applicants' arguments have been carefully considered but are not persuasive. Working examples 15-17 are concluded in figure 12 of the specification, which has been also discussed in the rejection above. The examples are limited to one chemokine SCL binding to C-terminal binding domains of the protein THAP1. Although the examples have defined the chemokine binding domain (aa 143-213), limited THAP1 or domain variants are described there. Examples 32 and 33 are basically concluded in figure 19 of the specification, which has been discussed and in the rejection above. The examples are limited to test the chemokines SLC, CCL19, CCL5, CXC19 and CXCl10 binding to the full length THAP1 fusion protein in two hybrid system. Thus, limited chemokines binding to the wild type THAP1 are described there. Examples 34-36 describe inhibitory function of the THAP1 protein, tested one chemokine CCL19.

Example 38 is presented in later application 11360450, not the instant application. Applicant is reminded that the possession of claimed invention requires the disclosure of the invention presented at the at the time the application was filed, not after.

Declaration of Dr. Jean-Philippe Girard (10/30/2007) showing inhibition of CCL1 and CCL5 activity by THAP1 protein, related rejection in the previous Office action has been withdrawn, the enabled subject matter has been indicated in the rejection above. However the declaration is insufficient to overcome the rejection related to the claimed method drown to use any peptide having at least 95% sequence identity to SEQ ID NO: 3 or its chemokine binding domain that binds to or inhibits activity of any chemokine. The reasons have been stated at page 8-9 of the Office action of 2/7/2008.

Conclusion

Claims 15, 17-20, 22, 24, 26-27, 92, 94-95, 97, 99-105, 107-108, 110-111, 113, 115-116, 118, 120-121 are allowed.

Claims 122-161 are rejected.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lei Yao, Ph.D. whose telephone number is 571-272-3112. The examiner can normally be reached on 8am-6.00pm Monday-Thursday.

Any inquiry of a general nature, matching or file papers or relating to the status of this application or proceeding should be directed to Kim Downing for Art Unit 1642 whose telephone number is 571-272-0521

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Larry Helms can be reached on 571-272-0832. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Lei Yao/
Examiner, Art Unit 1642

/Larry R. Helms/
Supervisory Patent Examiner, Art Unit 1643